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COBOL AND THE YEAR 2000

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This technical bulletin is meant to explain what the ‘YEAR2000' problem is and how it can be addressed in the COBOL world.

First we must define the problem.

For decades, or since the beginning of the use of computers to handle business data, most programs have been written to use just two (2) digits to represent the ‘year’, for example, ’95' for ‘1995'. This came about because of the cost of resources (memory and disk or tape) to store the data, and other similar reasons (in the 60's, and 70's, the year 2000 was a LONG way off). The result is that two-digit year-date values are EVERYWHERE. ALL of them will be WRONG on January 1, 2000, (for example, year 2000 = ‘00’, which is less than year 1999 = ‘99')! Thus the ‘YEAR2000 Problem’ can be defined as ‘using two-digit year values for dates’. The only long-term solution is to use four-digit year values, such as ‘1995' for 1995, for all year values in dates.

IBM COBOL as available to the State of Utah comes in 3 products.

1. The oldest is OS/VS COBOL (IBM product number 5740-CB1), sometimes referred to as COBOL I (and occasionally as OS COBOL, or VS COBOL). This COBOL supports the ANSI 74 standard. Application code created with this product exists in many applications at the State. IBM stopped marketing this product in June of 1992, and discontinued service in June of 1994. There is NO provision in this product for four-digit year values. Applications developed with this product will not deal with the YEAR2000 problem without major re-writing wherein the application deals with the needed four-digit year value since the date arithmetic in this COBOL can only use two-digit year values. Those applications that currently do their own date arithmetic can change to a four-digit year value by changing their logic, definitions, and data bases. The applications that use COBOL to do the date arithmetic are exposed to all of the two-digit year problems.

2. The mainframe IBM COBOL in current use is VS COBOL II (IBM product number 5668-958, Release 3), sometimes referred to as COBOL II or even VS COBOL. This COBOL supports the ANSI 85 standard. This product was withdrawn from marketing by IBM and service support will cease on June 30, 1996. All of the problems with two-digit year values that existed in the previous COBOL also exist in this COBOL.

3. The newest IBM COBOL is COBOL for MVS and VM (IBM product number 5688-197, Release 2), previously announced by IBM as IBM COBOL/370. This product is not yet installed at the State of Utah. This product directly supports four-digit year values, as well as all of the other 'new' features (Object Oriented code, DCE (Distributed Computing Environment), an interface to the related group of COBOLs for OS/2, AIX, OS/400, etc.). This COBOL uses the LE/ 370 (Language Environment, IBM Product number 5688-198) product interfaces for the 'run time' libraries (LE/370 is currently installed at the State of Utah). This COBOL normally requires no source code changes to be made to re-compile existing VS COBOL II application source. Once an application is re-compiled and running with COBOL for MVS and VM (using the LE/370 Run Time libraries), an application can use the 'Century Window' feature of LE/370 to deal with two- digit to four-digit year conversions until the databases and applications can be updated to directly use four-digit year values.

There are several IBM documents that supply greater detail on this subject, they are listed at the end of this paragraph. They are available from IBM directly, or from ITS. The ITS contact is Farrell Wiser, at 801- 538-3083. The IBM contact is George Van Tuyl, at 801-328-6879.

1. Solving the YEAR 2000 problem with COBOL and LE/370. (12 pages)
2. Technical Advantages of LE/370 and COBOL/370 (COBOL for MVS). (6 pages)
3. Why Migrate to COBOL/370 (COBOL for MVS) and LE/370? (32 pages)
4. The YEAR 2000 and 2-digit Dates: Executive Summary. (4 pages)
5. The YEAR 2000 and 2-digit Dates: A Guide for Planning and Implementation. (100+ pages) IBM Form # GC28-1251.
6. The IBM COBOL Family. (31 pages)
7. IBM COBOL for MVS & VM Environment. (33 pages)
8. COBOL Newsletters: JAN 94, MAY 94, NOV 94, OCT 95. (4 to 8 pages each)